Robust Summaries of Existing Data

PHYSICO-CHEMICAL PROPERTY – OCTANOL/WATER PARTITION COEFFICIENT	
Test Substance	
Chemical Name	Tall oil rosin
CAS #	8050-09-7
Remarks	This substance is referred to as tall oil rosin or rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Testing was conducted according to OECD Test Method 117, "Partition Coefficient (n-Octanol/Water) High Performance Liquid Chromatograph (HPLC) Method"
Test Type	Partition coefficient
GLP (Y/N)	Y
Year (Study Performed)	1993
Test conditions	Tall oil rosin was dissolved in methanol and the solution was analyzed by HPLC with UV detection using a mobile phase of methanol:buffer (3:1) at pH 2 and pH 7.5. As a reference substance, a mixture of seven materials was used.
Results	At pH 2, the log P_{ow} [K_{ow}] values of five components in tall oil rosin were 4.5, 6.1, 6.9, 7.1, and 7.2. At pH 7.5, the log P_{ow} value of one component in tall oil rosin was 3.6.
Data Quality	Reliable without restrictions – Klimisch Code 1a Note: the various K_{ow} values reflect the components in the mixture and not the mixture *per se.*
References	Dybdahl, H.P. 1993. Determination of log P_{ow} for single components in tall oil rosin. GLP Study No. 408335/471. Water Quality Institute, Horshølm, Denmark.

ENVIRONMENTAL FATE – BIODEGRADATION	
Test Substance	
Chemical Name	Tall oil rosin
CAS #	8050-09-7
Remarks	This substance is referred to as tall oil rosin or rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Testing was conducted according to OECD Test Method 301 D, "Ready Biodegradability: Closed Bottle Test"
Test Type (aerobic/anaerobic)	Aerobic
GLP (Y/N)	Y
Year (Study Performed)	1993
Contact time	28 days
Inoculum	Secondary effluent from Rungsted Treatment plant
Test conditions	Inoculum: Secondary effluent was collected from Rungsted Treatment plant. Concentration of test chemical: A stock solution of the test material (2 g/L) was prepared in demineralized water by ultra sonication for 5 minutes and magnetic stirring for 24 hours at 20°C. The solution was filtered and after determination of the chemical oxygen demand was used within 1 day. Test Setup: Test medium was prepared by adding 1 mL each of four solutions (potassium phosphate, magnesium sulfate, calcium chloride, ferric chloride) to 1 liter of demineralized water, which was aerated to an initial oxygen concentration of approximately 9 mg O_2/L and inoculated with 1 drop of secondary effluent per liter. The test article was added at 0.21 g/L to a part of the inoculated test medium, equivalent to a chemical oxygen demand of 4.52 mg O_2/L. Sodium benzoate, the reference compound, was added at 2 mg/L to another part of the inoculated medium (to assess the activity of the inoculum), equivalent to a theoretical oxygen demand of 3.34 mg O_2/L. Both the test and reference articles (0.21 g/L and 2 mg/L) were added to a third part of the inoculated medium (to assess possible inhibitory effects of the test article), at a theoretical oxygen demand of 7.86 mg O_2/L. Blank controls were prepared using the inoculated medium without test or reference materials. After the samples were prepared, the medium was transferred to calibrated respirometric bottles (BOD bottles), and placed in the dark at 20°C. The study was performed in triplicate.

	Sampling frequency: Samples were collected for BOD analysis on days 0, 7, 14, 21, and 28. Controls: Yes. Method of calculating oxygen demand: Oxygen demand was calculated as the difference between the measured oxygen concentrations at time t and the start of the test. Biological oxygen demand for the added carbon sources was calculated by subtracting the oxygen demand for the blank controls from the oxygen demand in the bottles containing test and reference compounds.
Results	
Degradation % after time	23% after 7 days and 32% after 28 days (test article); 59% after 7 days and 88% after 28 days (sodium benzoate)
Conclusions	The biological oxygen demand for tall oil rosin was 23 and 32% of the theoretical oxygen demand after 7 and 28 days, respectively. These data indicate that the material is dominated by recalcitrant compounds. Tall oil rosin did not inhibit the respiratory activity of the inoculum. The inoculum had satisfactory activity as demonstrated by 60% degradation within the 7 days using the reference compound.
Data Quality	Reliable without restrictions– Klimisch Code 1a
Reference	Madsen, T. 1993. Biodegradation of tall oil rosin. GLP Study No. 308067/471. Water Quality Institute, Horshplm, Denmark.

ENVIRONMENTAL FATE – BIODEGRADATION	
Test Substance	
Chemical Name	Rosin, sodium salt
CAS #	61790-51-0
Remarks	This substance is referred to as the sodium salt of rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Testing was conducted using the Shake Flask method similar to OECD Test Method 307.
Test Type (aerobic/anaerobic)	Aerobic
GLP (Y/N)	N
Year (Study Performed)	1965
Contact time	32 days
Inoculum	Activated sludge from the Bergen County Sewage Authority treatment plant in Little Ferry, N.J.
Test conditions	Inoculum: Activated sludge from the Bergen County Sewage Authority treatment plant in Little Ferry, N.J. Concentrations of test and reference chemicals: The test and reference chemicals were used at a concentration of 50 ppm. Test Setup: Test medium consisted of magnesium nitrate, calcium nitrate, ferric nitrate, calcium nitrate, cobaltous chloride, diammonium hydrogen phosphate, dipotassium hydrogen phosphate, and monopotassium hydrogen phosphate all dissolved in distilled water. A blank unit (containing all nutrients except the test materials) was treated in the same manner. Microbial cultures were added at a concentration of 10 mg/l on a dry-weight bases to begin the tests. All solutions were placed in Erlenmeyer flasks that were mounted on a shaker for aeration. The study was performed in triplicate. Sampling frequency: Samples were collected for determination of chemical oxygen demand (COD) on an almost daily basis. Controls: Yes. Linear alkylbenzene sulfonate (LAS) Method of calculating chemical oxygen demand: COD was calculated as the difference between the measured oxygen concentrations at various sampling times and the start of the test. COD for the samples was calculated by subtracting the COD for the blank controls from the COD in the flasks containing test and reference compounds.

Results	
Degradation % after time	70-80% after 21 days (test article) and 97% after 21 days (reference compound)
Conclusions	These data indicate that the sodium salt of rosin is readily biodegradable.
Data Quality	Reliable with restrictions– Klimisch Code 2e
Reference	Eldib, I.A. 1965. Biodegradability evaluation of (trade name deleted) [rosin, sodium salt]. Eldib Engineering and Research, Newark, N.J.

ACUTE TOXICITY – ORAL	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure was similar to OECD Test Method 401, "Acute Oral Toxicity"
GLP (Y/N)	N
Year (Study Performed)	1961
Species	Rats, mice, guinea pigs
Strain	Not specified
Route of administration	Oral
Dose levels	Dose levels not specified.
Sex and number/group	10 male rats, mice or guinea pigs
Frequency of treatment	Single oral gavage
Duration of test	14 day observation post-treatment
Control group (Y/N)	N
Results	
Acute Oral LD_{50}	Rats: 7,600, 8,400, and 7,600 mg/kg for gum, wood and tall oil rosin, respectively; mice: 4,600, 4,100 and 4,600 mg/kg for gum, wood and tall oil rosin, respectively; guinea pigs: 4,100, 4,100 and 4,600 mg/kg for gum, wood and tall oil rosin, respectively.
Detailed Summary	Male rats, mice or guinea pigs (n = 10) received graded oral gavage doses in corn oil of gum, wood or tall oil rosin (CAS #8050-09-7) and were observed for 14 days. Parameters evaluated included clinical signs, mortality, and gross necropsy. The oral LD_{50} values were calculated according to the method of Litchfield and Wilcoxon.
Data Quality	Reliable with restriction – Klimisch Code 2c
Reference	Kay, J.H. 1961. Acute toxicity of rosins. Industrial Bio-Test Laboratories, Northbrook, IL.

ACUTE TOXICITY – ORAL	
Test substance	
Chemical Name	Hydrogenated rosin
CAS #	65997-06-0
Remarks	This substance is referred to as hydrogenated rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure was similar to OECD Test Method 401, "Acute Oral Toxicity"
GLP (Y/N)	N
Year (Study Performed)	1982
Species	Rat
Strain	Wistar
Route of administration	Oral
Dose levels	30 mL/kg (approximately equivalent to 32,000 mg/kg, based on a density of 1.05 g/mL)
Sex and number/group	10 male and 10 female rats
Frequency of treatment	Single oral gavage
Duration of test	14 day observation post-treatment
Control group (Y/N)	N
Result	
Acute Oral LD_{50}	>30 mL/kg (or 32,000 mg/kg)
Detailed Summary	Wistar rats (n = 10/sex) received a single oral dose of 30 mL/kg hydrogenated rosin (CAS #65997-06-0) and were observed for 14 days. Parameters evaluated included clinical signs, mortality, and gross necropsy. One day after dosing, the rats were sluggish and had slight diarrhea. All of the animals recovered during the observation period and no deaths occurred. Gross necropsy revealed no treatment-related effects; the oral LD_{50} was reported as greater than 30 mL/kg (approximately equivalent to 32 g/kg, based on a density of 1.05 g/mL).
Data Quality	Valid with restriction – Klimisch Code 1b
Reference	Spanjers, M.Th. 1981. Determination of the acute oral toxicity of [hydrogenated rosin -- trade name deleted] in rats. CIVO-TNO.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to OECD Test Method 407, "Repeat Dose 28-Day Oral Toxicity Study in Rodents."
Year	1960
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	90 days
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.01, 0.05, 0.2, 1, or 5%
Control group (Y/N)	Y
Results	
NOEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 10/sex/group) were treated with gum rosin (CAS # 8050-09-7) in the diet at concentrations of 0, 0.01, 0.05, 0.2, 1, or 5% for 90 days. The approximate doses were 0, 10, 50, 200, 1,000, or 5,000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, hematocrit, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (brain, heart, liver, kidneys, spleen, testes/ovaries), and microscopic pathology (brain, liver, spleen, stomach, small intestine, colon, pancreas, kidneys, urinary bladder, adrenals, gonads, thyroid, parathyroid, lymph nodes, heart, lungs, bone marrow, muscle, prostate, uterus). All of the rats dosed with 5% gum rosin died between days 3 and 7. These animals exhibited significant weight loss and a marked decrease in food consumption. Starvation through refusal to eat was considered the primary cause of death. No other mortalities occurred and no adverse clinical signs were noted. A decrease in mean body weight was reported in rats treated with 1%; body weight gain was also slightly decreased in this group. Food consumption

	and food utilization (grams gained/grams food consumed) were decreased at 1%. For food utilization, the decrease occurred during the first two weeks, but was comparable to control levels thereafter indicating that palatability was the principal cause of the depression. The body weight and food effects were primarily noted in the first few weeks of the study. No treatment-related effects on hematology or urinalysis parameters were reported. At necropsy, no changes were noted that were related to treatment. Absolute organ weights were not affected, but some of the relative weights in the 1% group were altered. These changes were related to the decreased body weight in this group and were not considered to be a direct treatment effect. No histopathological changes were observed in any organ. Reproductive organs (*i.e*., testes, ovaries, uterus) showed no evidence of toxicity at any dose level. Based on these data, it appears that the NOEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Calandra, J.C. 1960. Ninety-day subacute oral toxicity of gum rosin. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to OECD Test Method 407, "Repeat Dose 28-Day Oral Toxicity Study in Rodents."
Year	1960
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	90 days
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.01, 0.05, 0.2, 1, or 5%
Control group (Y/N)	Y
Results	
NOEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 10/sex/group) were treated with rosin (CAS # 8050-09-7) in the diet at concentrations of 0, 0.01, 0.05, 0.2, 1, or 5% for 90 days. The approximate doses were 0, 10, 50, 200, 1,000, or 5,000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, hematocrit, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (brain, heart, liver, kidneys, spleen, testes/ovaries), and microscopic pathology (brain, liver, spleen, stomach, small intestine, colon, pancreas, kidneys, urinary bladder, adrenals, gonads, thyroid, parathyroid, lymph nodes, heart, lungs, bone marrow, muscle, prostate, uterus). All animals treated with 5% rosin died between days 4 and 12. These animals exhibited significant weight loss and a marked decrease in food consumption. Death was related to starvation associated with food refusal. One other death occurred on day 77 in the low-dose group, but this was not treatment-related. No adverse clinical signs were noted in any group. Decreases in mean body weight and body weight gain were reported in rats treated with 1%. In

	addition, food consumption and food utilization (grams gained/grams food consumed) were decreased at this dose level. For food utilization, the decrease primarily occurred during the first week of dosing, but was comparable to control levels thereafter indicating that palatability was the principal cause of the depression. A slight decrease in body weight, body weight gain and food consumption were reported at 0.2%; food utilization was unaffected in this group. No treatment-related effects on hematology or urinalysis parameters were reported. Statistical analyses revealed increases in absolute liver weights in the 1% animals as well as increases in select organ to body weight ratios (primarily liver, kidney, spleen in males, and liver in females). These changes were not considered to be toxicologically significant because the animals in this group exhibited decreased body weight and no histopathological changes were observed in any organ. Reproductive organs (*i.e*., testes, ovaries, uterus) showed no evidence of toxicity at any dose level. Based on these data, it appears that the NOAEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Calandra, J.C. 1960. Ninety-day subacute oral toxicity of [trade name deleted] rosin. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to OECD Test Method 407, "Repeat Dose 28-Day Oral Toxicity Study in Rodents."
Year	1960
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	90 days
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.01, 0.05, 0.2, 1, or 5%
Control group (Y/N)	Y
Results	
NOAEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 10/sex/group) were treated with rosin (CAS # 8050-09-7) in the diet at concentrations of 0, 0.01, 0.05, 0.2, 1, or 5% for 90 days. The approximate doses were 0, 10, 50, 200, 1,000, or 5,000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, hematocrit, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (brain, heart, liver, kidneys, spleen, testes/ovaries), and microscopic pathology (brain, liver, spleen, stomach, small intestine, colon, pancreas, kidneys, urinary bladder, adrenals, gonads, thyroid, parathyroid, lymph nodes, heart, lungs, bone marrow, muscle, prostate, uterus). Eighteen of the animals treated with 5% resin died between days 4 and 18. An additional two animals died on days 46 and 77. These animals exhibited significant weight loss and decreases in food consumption and food utilization. Death was related to starvation associated with food refusal. One death occurred on day 70 at 0.01% and another death occurred on day 54 at 0.2%; these were isolated findings and were not considered to be treatment-

	related. No adverse clinical signs were noted in any group. Decreases in mean body weight and body weight gain were reported in rats treated with 0.2 and 1%; the effect was slight at 0.2%. Food consumption and food utilization were decreased at 1%. No treatment-related effects on hematology or urinalysis parameters were reported. At necropsy, no adverse effects were reported. Some organ weight alterations were noted in the 1% dose group, but due to the significant depression in body weights in this group, the effects are not considered to be toxicologically significant. No histopathological changes were observed in any organ. Reproductive organs (*i.e*., testes, ovaries, uterus) showed no evidence of toxicity at any dose level. Based on these data, it appears that the NOAEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Calandra, J.C. 1960. Ninety-day subacute oral toxicity of resin [trade name deleted]. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to OECD Test Method 407, "Repeat Dose 28-Day Oral Toxicity Study in Rodents."
Year	1960
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	90 days
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.01, 0.05, 0.2, 1, or 5%
Control group (Y/N)	Y
Results	
NOEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 10/sex/group) were treated with wood rosin (CAS # 8050-09-7) in the diet at concentrations of 0, 0.01, 0.05, 0.2, 1, or 5% for 90 days. The approximate doses were 0, 10, 50, 200, 1,000, or 5,000 mg/kg/day, based on standard conversion factors (WHO (1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, erythrocyte count, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (brain, heart, liver, kidneys, spleen, testes/ovaries), and microscopic pathology (brain, liver, spleen, stomach, small intestine, colon, pancreas, kidneys, urinary bladder, adrenals, gonads, thyroid, parathyroid, lymph nodes, heart, lungs, bone marrow, muscle, prostate, uterus). Nine rats treated with 5% wood rosin died on days 7 and 8; the deaths were related to starvation associated with food refusal. No other mortalities occurred during the study, and no adverse clinical signs were noted in any group. The animals treated with 5% exhibited significant weight loss, especially during the first six weeks of the study. A marked decrease in food consumption was also noted in the high-dose animals, but this corresponded more to food

	"disappearance" (*i.e*., scattering) than to a true decrease in food consumption; palatability was considered to be the primary factor involved. Decreases in mean body weight and body weight gain were reported in rats treated with 1%, but the decreases were not statistically significant. Food consumption was not affected in the 1% group, but food utilization was slightly decreased. No treatment-related effects on hematology or urinalysis parameters were reported. At necropsy, the kidneys of the high-dose animals (5% group) were described as: stippled and yellow in color; the cortex was thin; the cortico-medullary junction was indistinct; and there were discolored patches intermingled with cyst-like areas. These effects were not observed in any other dose group. Significant increases in absolute and relative liver weights were reported at 1 and 5%. Other organ weight changes noted at 5% were associated with the depression in body weight in this group. Histopathological examination revealed marked dilation and tortuosity of the renal distal convoluted and collecting segment tubules of the high-dose rats. In addition, a few glomeruli revealed active inflammatory and degenerative changes without proliferation or organization. Reproductive organs (*i.e*., testes, ovaries, uterus) showed no evidence of toxicity at any dose level. Based on these data, it appears that the NOEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Calandra, J.C. 1960. Ninety-day subacute oral toxicity of b-wood resin. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to OECD Test Method 407, "Repeat Dose 28-Day Oral Toxicity Study in Rodents."
Year	1960
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	90 days
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.01, 0.05, 0.2, 1, or 5%
Control group (Y/N)	Y
Results	
NOAEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 10/sex/group) were treated with wood rosin (CAS # 8050-09-7) in the diet at concentrations of 0, 0.01, 0.05, 0.2, 1, or 5% for 90 days. The approximate doses were 0, 10, 50, 200, 1,000, or 5,000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, hematocrit, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (brain, heart, liver, kidneys, spleen, testes/ovaries), and microscopic pathology (brain, liver, spleen, stomach, small intestine, colon, pancreas, kidneys, urinary bladder, adrenals, gonads, thyroid, parathyroid, lymph nodes, heart, lungs, bone marrow, muscle, prostate, uterus). All animals treated with 5% wood rosin died between days 3 and 8. These animals exhibited significant weight loss and a marked decrease in food consumption. Starvation through food refusal was identified as the primary cause of death. No adverse clinical signs were noted in any group. Slight decreases in mean body weight and body weight gain were reported in the rats treated with 1%. Food consumption was also slightly decreased at 1%, but food

	utilization was unaffected. In the 0.05% dose group, food consumption was decreased, but no explanation for this "apparent discrepancy" was provided; this effect is unlikely to be treatment-related. No treatment-related effects on hematology or urinalysis parameters were reported. At necropsy, no gross changes were observed. Statistical analyses revealed increases in absolute liver weights as well as increases in liver to body and brain weight ratios in the 1% dose group. These changes were not considered to be toxicologically significant because the animals in this group exhibited decreased body weight and no histopathological changes were observed in any organ. Reproductive organs (*i.e*., testes, ovaries, uterus) showed no evidence of toxicity at any dose level. Based on these data, it appears that the NOAEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Calandra, J.C. 1960. Ninety-day subacute oral toxicity of n-wood rosin. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to EPA Test Method OPPTS 870.4200, "Carcinogenicity."
Year	1962
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	Two years
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.05, 1%
Control group (Y/N)	Y
Results	
NOEL:	0.05%, approximately 50 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 30 /sex/dose) were exposed to gum rosin (CAS # 8050-09-7) at dietary concentrations of 0, 0.05, or 1% for two years. The approximate doses were 0, 50, or 1000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, erythrocyte count, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (liver, kidneys, spleen, gonads, heart, brain, thyroid gland, adrenal gland), tumor incidence (organs examined not specified), and microscopic pathology (heart, lung, trachea, liver, pancreas, stomach, small intestine, colon, spleen, lymph node, kidney, urinary bladder, testis, ovary, prostate, uterus, pituitary, adrenal gland, salivary gland, thyroid gland, parathyroid gland, skeletal muscle, bone marrow, brain). No treatment-related increase in mortality was reported. The only clinical signs were generalized inactivity and weakness in the animals dying on study. Mean body weight and body weight gain were statistically significantly decreased at 1%. Food consumption was also decreased in the high-dose group, but food utilization was only slightly

	decreased. These effects were attributed to the palatability of the test diet. No treatment-related effects were reported on hematology, urinalysis, organ weights, and gross and microscopic pathology. Reproductive organs (*i.e.*, testes, ovaries, uterus) showed no evidence of toxicity at any dose level. The tumor incidence and tumor types were similar in the test and control groups. Based on these data, it appears that the NOEL was 0.05% (approximately 50 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Kay, J.H. 1962. Two-year chronic oral toxicity of b-wood resin – albino rats. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to EPA Test Method OPPTS 870.4200, "Carcinogenicity."
Year	1962
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	Two years
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.05, 0.2, 1%
Control group (Y/N)	Y
Results	
NOEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 30 /sex/dose) were exposed to wood rosin (CAS # 8050-09-7) at dietary concentrations of 0, 0.05, 0.2, or 1% for two years. The approximate doses were 0, 50, 200, or 1000 mg/kg/day, based on standard conversion factors provided by WHO (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, erythrocyte count, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (liver, kidneys, spleen, gonads, heart, brain, thyroid gland, adrenal gland), tumor incidence (organs examined not specified), and microscopic pathology (heart, lung, trachea, liver, pancreas, stomach, small intestine, colon, spleen, lymph node, kidney, urinary bladder, testis, ovary, prostate, uterus, pituitary, adrenal gland, salivary gland, thyroid gland, parathyroid gland, skeletal muscle, bone marrow, brain). No treatment-related increase in mortality was reported. The only clinical signs were generalized inactivity and weakness in the animals dying on study. In the high-dose group, mean body weight and body weight gain were statistically significantly decreased in both sexes at the

	interim (12-month) sacrifice and in the females at the terminal sacrifice. These parameters were slightly decreased in the males at 24 months. Food consumption was decreased in the high-dose group, but food utilization was generally comparable to control levels. The effects on body weight and food consumption were attributed to the palatability of the test diet. No treatment-related effects were reported on hematology, urinalysis, and gross and microscopic pathology. Relative liver weight was significantly increased in the females treated with 1%. Reproductive organs (*i.e.*, testes, ovaries, uterus) showed no evidence of toxicity at any dose level. The tumor incidence and tumor types were similar in the test and control groups. Based on these data, it appears that the NOEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Kay, J.H. 1962. Two-year chronic oral toxicity of n-wood rosin – albino rats. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Rosin
CAS #	8050-09-7
Remarks	This substance is referred to as rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to EPA Test Method OPPTS 870.4200, "Carcinogenicity."
Year	1962
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	Two years
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.05, 1%
Control group (Y/N)	Y
Results	
NOEL:	0.05%, approximately 50 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 30 /sex/dose) were exposed to gum rosin (CAS # 8050-09-7) at dietary concentrations of 0, 0.05, or 1% for two years. The approximate doses were 0, 50, or 1000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, erythrocyte count, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (liver, kidneys, spleen, gonads, heart, brain, thyroid gland, adrenal gland), tumor incidence (organs examined not specified), and microscopic pathology (heart, lung, trachea, liver, pancreas, stomach, small intestine, colon, spleen, lymph node, kidney, urinary bladder, testis, ovary, prostate, uterus, pituitary, adrenal gland, salivary gland, thyroid gland, parathyroid gland, skeletal muscle, bone marrow, brain). No treatment-related increase in mortality was reported. The only clinical signs were generalized inactivity and weakness in the animals dying on study. Mean body weight and body weight gain were statistically significantly decreased at 1%. Food consumption was also decreased in the high-dose group, but food utilization was unaffected.

	The effects on body weight and food consumption were attributed to the palatability of the test diet. No treatment-related effects were reported on hematology, urinalysis, and gross and microscopic pathology. Relative liver weight was significantly increased at 1%. Reproductive organs (*i.e*., testes, ovaries, uterus) showed no evidence of toxicity at any dose level. The tumor incidence and tumor types were similar in the test and control groups. Based on these data, it appears that the NOEL was 0.05% (approximately 50 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Kay, J.H. 1962. Two-year chronic oral toxicity of gum rosin – albino rats. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Hydrogenated rosin
CAS #	65997-06-0
Remarks	This substance is referred to as hydrogenated rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to OECD Test Method 407, "Repeat Dose 28-Day Oral Toxicity Study in Rodents."
Year	1960
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	90 days
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.01, 0.05, 0.2, 1, or 5%
Control group (Y/N)	Y
Results	
NOAEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 10/sex/group) were treated with hydrogenated rosin (CAS # 65997-06-0) in the diet at concentrations of 0, 0.01, 0.05, 0.2, 1, or 5% for 90 days. The approximate doses were 0, 10, 50, 200, 1,000, or 5,000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food utilization, hematology parameters (hemoglobin concentration, hematocrit, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (brain, heart, liver, kidneys, spleen, testes/ovaries), and microscopic pathology (brain, liver, spleen, stomach, small intestine, colon, pancreas, kidneys, urinary bladder, adrenals, gonads, thyroid, parathyroid, lymph nodes, heart, lungs, bone marrow, muscle, prostate, uterus). All the animals in the high-dose group died prior to study termination. These deaths occurred between study day 3 and 11 and were attributed to starvation through food refusal (*i.e.*, treatment-related). Rats in this group also experienced weight loss and a marked decrease in food consumption. In the 1% group, body weight was significantly decreased in both males and females, and food consumption was decreased. With the exception of the first week of dosing, food utilization (grams gained/gram

	food consumed) was not affected at a dietary concentration of 1% indicating that the reduced food consumption was related to its palatability. No treatment-related effects on hematology, urinalysis, or gross or microscopic pathology. Some statistically significant organ weight effects were reported in the 1% dose group, but these were considered to arise secondary to decreased body weight. Reproductive organs (*i.e*., testes, ovaries, uterus) showed /no evidence of toxicity at any dose level. Based on these data, it appears that the NOEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Calandra, J.C. 1960. Ninety-day subacute oral toxicity of [trade name deleted] hydrogenated rosin. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.

REPEAT DOSE TOXICITY	
Test substance	
Chemical Name	Hydrogenated rosin
CAS #	65997-06-0
Remarks	This substance is referred to as hydrogenated rosin in the test plan for Rosins and Rosin Salts.
Method	
Method/Guideline followed	Test procedure is similar to EPA Test Method OPPTS 870.4200, "Carcinogenicity."
Year	1962
GLP (Y/N)	N (pre-GLP)
Species	Rat
Strain	Sprague-Dawley
Sex	Male, female
Route of Administration	Oral, diet
Exposure Period	Two years
Frequency of Treatment	Daily
Post-exposure observation period	None
Dose Levels	0, 0.05, 0.2, 1%
Control group (Y/N)	Y
Results	
NOEL:	0.2%, approximately 200 mg/kg/day
Detailed Summary	Weanling Sprague-Dawley rats (n = 30 /sex/dose) were exposed to hydrogenated rosin (CAS # 65997-06-0) at dietary concentrations of 0, 0.05, 0.2, or 1% for two years. The approximate doses were 0, 50, 200, or 1000 mg/kg/day, based on standard conversion factors (WHO 1990). Parameters evaluated included clinical signs, mortality, body weight, body weight gain, food consumption, food utilization, hematology parameters (hemoglobin concentration, erythrocyte count, total and differential leukocyte counts), urinalysis parameters (reducing substances, albumin, microscopic elements), gross pathology, organ weights (liver, kidneys, spleen, gonads, heart, brain, thyroid gland, adrenal gland), tumor incidence (organs examined not specified), and microscopic pathology (heart, lung, trachea, liver, pancreas, stomach, small intestine, colon, spleen, lymph node, kidney, urinary bladder, testis, ovary, prostate, uterus, pituitary, adrenal gland, salivary gland, thyroid gland, parathyroid gland, skeletal muscle, bone marrow, brain). No increase in mortality occurred and the only clinical signs were generalized inactivity and weakness in animals dying on study. A significant decrease in body weight gain was noted in the 1% dose group at the interim sacrifice (12 months) only. Body weights were also decreased in this

	group at the 12-month time point. After 24 months, no effect of treatment on body weight or body weight gain was observed. Food consumption was decreased in the high-dose group, but food utilization was unaffected. It was suggested that the body weight and food consumption effects were related to the palatability of the test diet. No effects on hematology, urinalysis, organ weights, and gross and microscopic pathology were reported. Reproductive organs (*i.e*., testes, ovaries, uterus) showed no evidence of toxicity at any dose level. The tumor incidence and tumor types were similar in the test and control groups. Based on these data, it appears that the NOEL was 0.2% (approximately 200 mg/kg/day).
Data Quality	Valid without restriction – Klimisch Code 1b
References	Kay, J.H. 1962. Two-year chronic oral toxicity of [trade name deleted] hydrogenated rosin – albino rats. Industrial Bio-Test Laboratories, Inc., Northbrook, Illinois. World Health Organization (WHO). 1990. Principles for the Toxicological Assessment of Pesticide Residues in Food.